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MOTOROLA

# MTX850 and MTX950

Portable Radio for Privacy Plus™ Systems
Radio Portatif pour Systémes Privacy Plus™

reliable

flexible

powerful

As Dedicated As You Are™

Professional Radio

User Guide
Guide de l´usager

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## COMPUTER SOFTWARE COPYRIGHTS

The Motorola products described in this manual may include copyrighted Motorola computer programs stored in semiconductor memories or other media. Laws in the United States and other countries preserve for Motorola certain exclusive rights for copyrighted computer programs, including, but not limited to, the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Motorola computer programs contained in the Motorola products described in this manual may not be copied, reproduced, modified, reverse-engineered, or distributed in any manner without the express written permission of Motorola. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Motorola, except for the normal non-exclusive license to use that arises by operation of law in the sale of a product.

## Notes

# SAFETY

## SAFETY AND GENERAL INFORMATION

### IMPORTANT INFORMATION ON SAFE AND EFFICIENT OPERATION

### READ THIS INFORMATION BEFORE USING YOUR MOTOROLA TWO-WAY RADIO

The information provided in this document supersedes the general safety information contained in user guides published prior to October 2000. For information regarding radio use in a hazardous atmosphere refer to the Factory Mutual (FM) manual supplement included with radio models that offer this capability and/or the intrinsic safety radio information section of this user manual.

## RADIO FREQUENCY (RF) OPERATIONAL CHARACTERISTICS

**To transmit (talk) you must push the Push-To-Talk button; to receive (listen) you must release the Push-To-Talk button.** When the radio is transmitting, it generates radio frequency (RF) energy; when it is receiving, or when it is off, it does not generate RF energy.

## PORTABLE RADIO OPERATION AND EME EXPOSURE

Your Motorola radio is designed to comply with the following national and international standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy (EME):

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998

- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 1999 (applicable to wireless phones only)

**To assure optimal radio performance and make sure human exposure to radio frequency electromagnetic energy is within the guidelines set forth in the above standards, always adhere to the following procedures:**

**Two-way Radio Operation**

When using your radio, **hold the radio in a vertical position with the microphone one to two inches (2.5 to 5 centimeters) away from the lips.**

**Body-worn Operation**

To maintain compliance with FCC RF exposure guidelines, if you wear a radio on your body when transmitting, always place the radio in **a Motorola approved clip, holder, holster, case, or body harness for this product**. Use of non-Motorola-approved accessories may exceed FCC RF exposure guidelines. **If you do not use a Motorola approved body-worn accessory and are not using the radio in the intended use positions along side of the head in the phone mode or in front of the face in the two-way radio mode, then ensure the antenna and radio is kept the following minimum distances from the body when transmitting:**

- Phone or Two-way radio mode: one inch (2.5 centimeters)
- Data operation using any data feature with or without an accessory cable: one inch (2.5 centimeters)

### Antenna Care

**Use only the supplied or an approved replacement antenna.** Unauthorized antennas, modifications, or attachments could damage the radio and may violate FCC regulations.

**DO NOT hold the antenna when the radio is "IN USE".** Holding the antenna affects call quality and may cause the radio to operate at a higher power level than needed.

### Approved Accessories

For a list of approved Motorola accessories look in the appendix or accessory section of your radio's User Guide.

## ELECTROMAGNETIC INTERFERENCE/COMPATIBILITY

**Note:** Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility.

### Facilities

To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

### Aircraft

When instructed to do so, turn off your radio when on board an aircraft. Any use of a radio must be in accordance with applicable regulations per airline crew instructions.

### Medical Devices

- **Pacemakers**

  The Health Industry Manufacturers Association recommends that a minimum separation of 6 inches (15 centimeters) be maintained between a handheld wireless radio and a pacemaker.These recommendations are consistent with those of the U.S. Food and Drug Administration.

Persons with pacemakers should:

- ALWAYS keep the radio more than 6 inches (15 centimeters) from their pacemaker when the radio is turned ON.
- Not carry the radio in the breast pocket.
- Use the ear opposite the pacemaker to minimize the potential for interference.
- Turn the radio OFF immediately if you have any reason to suspect that interference is taking place.

- **Hearing Aids**

  Some digital wireless radios may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.

- **Other Medical Devices**

  If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining this information.

## SAFETY AND GENERAL

### Use While Driving

Check the laws and regulations on the use of radios in the area where you drive. Always obey them.

When using your radio while driving, please:

- Give full attention to driving and to the road.
- Use hands-free operation, if available.
- Pull off the road and park before making or answering a call if driving conditions so require.

## OPERATIONAL WARNINGS

WARNING

**FOR VEHICLES WITH AN AIR BAG**

Do not place a portable radio in the area over an air bag or in the air bag deployment area. Air bags inflate with great force. If a portable radio is placed in the air bag deployment area and the air bag inflates, the radio may be propelled

with great force and cause serious injury to occupants of the vehicle.

### POTENTIALLY EXPLOSIVE ATMOSPHERES

Turn off your radio prior to entering any area with a potentially explosive atmosphere, unless it is a radio type especially qualified for use in such areas as "Intrinsically Safe" (for example, Factory Mutual, CSA, UL, or CENELEC). Do not remove, install, or charge batteries in such areas. Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.

**Note:** The areas with potentially explosive atmospheres referred to above include fueling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles, such as grain, dust or metal powders, and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often but not always posted.

### BLASTING CAPS AND AREAS

To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted: "Turn off two-way radio." Obey all signs and instructions.

## OPERATIONAL CAUTIONS

Caution

### ANTENNAS

**Do not use any portable radio that has a damaged antenna.** If a damaged antenna comes into contact with your skin, a minor burn can result.

### BATTERIES

All batteries can cause property damage and/or bodily injury such as burns if a conductive material such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

## INTRINSICALLY SAFE RADIO INFORMATION

### FMRC Approved Equipment

Anyone intending to use a radio in a location where hazardous concentrations of flammable material exist (hazardous atmosphere) is advised to become familiar with the subject of intrinsic safety and with the National Electric Code NFPA 70 (National Fire Protection Association) Article 500 (hazardous [classified] locations).

An Approval Guide, issued by Factory Mutual Research Corporation (FMRC), lists manufacturers and the products approved by FMRC for use in such locations. FMRC has also issued a voluntary approval standard for repair service (“Class Number 3605”).

FMRC Approval labels are attached to the radio to identify the unit as being FM Approved for specified hazardous atmospheres. This label specifies the hazardous Class/Division/ Group along with the part number of the battery that must be used. Depending on the design of the portable unit, this FM label can be found on the back or the bottom of the radio housing. The FM Approval mark is shown below:

## WARNINGS

•Do not operate radio communications equipment in a hazardous atmosphere unless it is a type especially qualified for such use (e.g., FMRC Approved). An explosion or fire may result.

- Do not operate an FMRC Approved Product in a hazardous atmosphere if it has been physically damaged (e.g., cracked housing). An explosion or fire may result.
- Do not replace or charge batteries in a hazardous atmosphere. Contact sparking may occur while installing or removing batteries and cause an explosion or fire.

## WARNINGS

WARNING

•Do not replace or change accessories in a hazardous atmosphere. Contact sparking may occur while installing or removing accessories and cause an explosion or fire.

- Do not operate an FMRC Approved Product unit in a hazardous location with the accessory contacts exposed. Keep the connector cover in place when accessories are not used.
- Turn a radio off before removing or installing a battery or accessory.
- Do not disassemble an FMRC Approved Product unit in any way that exposes the internal electrical circuits of the unit.
- Radios must ship from the Motorola manufacturing facility with the hazardous atmosphere capability and FM Approval labeling. Radios will not be “upgraded” to this capability and labeled in the field.
- A modification changes the unit’s hardware from its original design configuration. Modifications can only be made by the original product manufacturer at one of its FMRC-audited manufacturing facilities.

## WARNINGS

WARNING

•Failure to use an FMRC Approved Product unit with an FMRC Approved battery or FMRC Approved accessories specifically approved for that product may result in the dangerously unsafe condition of an unapproved radio combination being used in a hazardous location.

- Unauthorized or incorrect modification of an FMRC Approved Product unit will negate the Approval rating of the product.

**Repair of FMRC Approved Products**

REPAIRS FOR MOTOROLA PRODUCTS WITH FMRC APPROVAL ARE THE RESPONSIBILITY OF THE USER.

You should not repair or relabel any Motorola-manufactured communication equipment bearing the FMRC Approval label (“FMRC Approved Product”) unless you are familiar

with the current FMRC Approval standard for repairs and service (“Class Number 3605”).

You may want to consider using a repair facility that operates under 3605 repair service approval.

## WARNINGS

WARNING

•Incorrect repair or relabeling of any FMRC Approved Product unit could adversely affect the Approval rating of the unit.

•Use of a radio that is not intrinsically safe in a hazardous atmosphere could result in serious injury or death.

FMRC’s Approval Standard Class Number 3605 is subject to change at any time without notice to you, so you may want to obtain a current copy of 3605 from FMRC. Per the December 1994 publication of 3605, some key definitions and service requirements are as follows:

### *Repair*

A repair constitutes something done internally to the unit that would bring it back to its original condition—Approved by FMRC. A repair should be done in an FMRC Approved facility.

Items not considered as repairs are those in which an action is performed on a unit which does not require the outer casing of the unit to be opened in a manner which exposes the internal electrical circuits of the unit. You do not have to be an FMRC Approved Repair Facility to perform these actions.

### *Relabeling*

The repair facility shall have a method by which the replacement of FMRC Approval labels are controlled to ensure that any relabeling is limited to units that were originally shipped from the Manufacturer with an FM Approval label in place. FMRC Approval labels shall not be stocked by the repair facility. An FMRC Approval label shall be ordered from the original manufacturer, as needed, to repair a specific unit. Replacement labels may be obtained and applied by the repair facility, provided there is satisfactory evidence that the unit being relabeled was originally an FMRC Approved unit. Verification may include, but is not limited to: a unit with a damaged Approval label, a unit with a defective housing displaying an Approval label, or a customer invoice indicating the serial number of the unit and purchase of an FMRC Approved model.

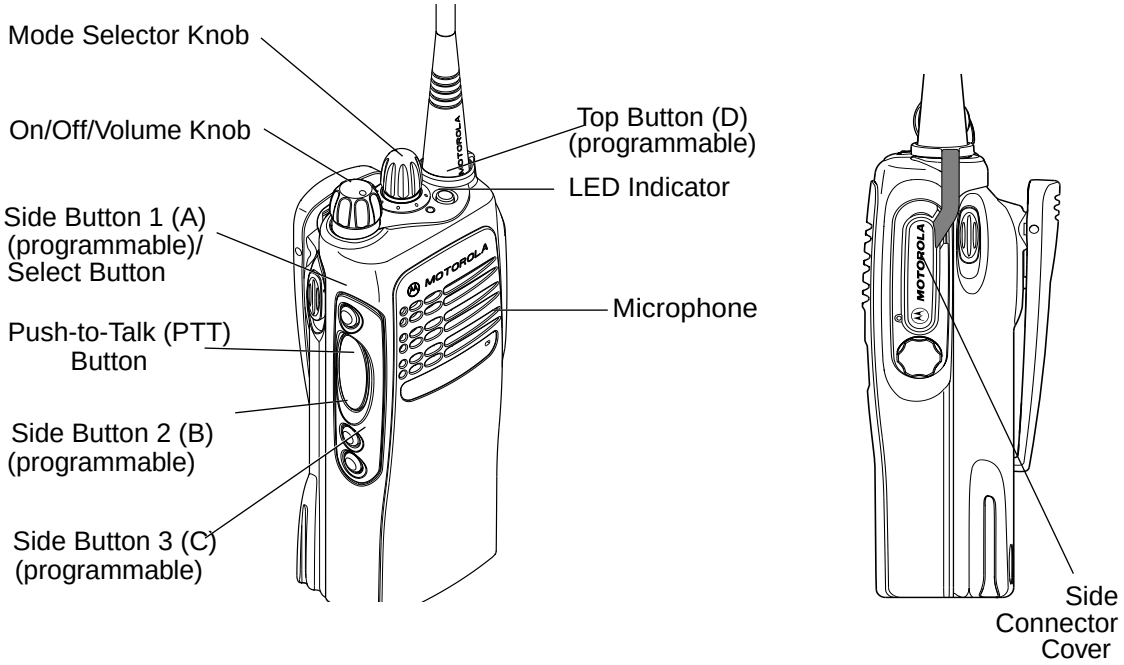
### *Do Not Substitute Options or Accessories*

The Motorola communications equipment certified by Factory Mutual is tested as a system and consists of the FM Approved portable, FM Approved battery, and FM Approved accessories or options, or both. This FM Approved portable and battery combination must be strictly observed. There must be no substitution of items, even if the substitute has been previously Approved with a different Motorola communications equipment unit. Approved configurations are listed in the FM Approval Guide published by FMRC, or in the product FM Supplement. This FM Supplement is shipped from the manufacturer with the FM Approved radio and battery combination. The Approval Guide, or the Approval Standard Class Number 3605 document for repairs and service, can be ordered directly from Factory Mutual Research Corporation located in Norwood, Massachusetts.

## Notes

## PARTS OF THE RADIO

**MTX850 and MTX950 Models**



### On/Off/Volume Knob

Turns the radio on or off, and adjusts the radio's volume.

### Mode Selector Knob

Selects the required operation mode.

### Push-to-Talk (PTT) Button

Press and hold down this button to talk; release to listen.

### LED Indicator

Indicates status of operating conditions (see table below).

| With PTT button pressed (radio transmitting) | |
|---|---|
| Steady red | Radio is transmitting (**PTT** button pressed) |
| LED unlit | Radio is not transmitting |
| Flashing red | Low battery (conventional mode only; programmable by your authorized Motorola dealer) |
| Momentary green | Radio has powered-up successfully |

| With PTT Released (radio receiving) | |
|---|---|
| Blinking red light | Mode busy (conventional mode only) |
| Blinking green light | Receipt of a telephone call, Private Conversation call, or Call Alert page |

### Microphone

When sending a message, hold the microphone 1 to 2 inches (2.5 to 5 cm) away from your mouth, and speak clearly into the microphone.

### Alert Tone Indications

Your radio generates a number of audible tones to indicate radio operating conditions:

- **Low Battery** – A low-battery condition is indicated by a high-pitched, cricket-like “chirp-chirp” tone when the **PTT** button is released following a transmission.
- **Successful Power-Up** – A short, medium-pitched tone when the radio is first turned on indicates that the radio has passed its power-up self test and is ready for use.
- **Unsuccessful Power-Up** – A short, low-pitched tone when the radio is first turned on indicates that the radio has failed its power-up self test and is not ready for use. Contact your authorized Motorola dealer for service.
- **Transmit on Receive-Only Mode** – If you press the **PTT** button while tuned to a “receive-only” mode, you will hear a continuous, low-pitched alert tone, indicating that no transmission is possible on this mode. This tone will continue until the **PTT** button is released.
- **Transmit Inhibit on Busy Mode** – If you press the **PTT** button when the mode is busy, you will hear a continuous, low-pitched alert tone, indicating that no transmission is possible on this mode. This tone will continue until the **PTT** button is released.
- **Transmit Inhibit on Low Battery** – If you press the **PTT** button when the battery is low, you will hear a continuous, low pitched alert tone, indicating that transmission is impossible.
- **Invalid Mode** – A continuous, low-pitched tone is heard when an invalid or unprogrammed operation is attempted on the radio.
- **Valid (Good) Key Press** – A short, medium-pitched tone when a keypad key is pressed indicates that the key press was accepted.
- **Invalid (Bad) Key Press** – A short, low-pitched tone when a keypad key is pressed indicates that the key press was rejected.

- **Failsoft (Trunked Systems Only)** – A faint “beeping” tone every ten seconds indicates that the radio is operating in the failsoft mode.
- **Time-Out Timer Warning** – Your radio’s time-out timer limits the length of your transmission time. When you are pressing the **PTT** button (transmitting), a short, low-pitched warning tone will sound four seconds before the allotted time will expire.
- **Time-Out Timer Timed-Out** – If you hold down the **PTT** button longer than the time-out timer’s allotted time, a continuous, low-pitched tone will sound, indicating that your transmission has been cut off. This tone will continue until the **PTT** button is released.
- **Phone Busy** – A “bah-bah-bah-bah” tone when telephone interconnect is accessed indicates that all available modes are busy and the radio is in queue for the next available phone line.
- **Call Alert (Page) Received** – A group of four medium-pitched tones every five seconds indicates that your radio has received a Call Alert page.
- **Private Conversation™ Call Received** – A group of two medium-pitched tones indicates that your radio has received a Private Conversation call. This sequence is repeated every five seconds for approximately 20 seconds for enhanced Private Conversation.
- **Trunked System Busy (Trunked Systems Only)** – A “bah-bah-bah-bah” tone when a trunked system is accessed indicates that all available channels are busy and the radio is in queue for the next available channel.
- **Call Back (Trunked Systems Only)** – A group of three medium-pitched tones (di-di-dit) indicates that a talkgroup is now available for your previously requested transmission.

**Programmable Buttons**

Several of your radio's buttons can be programmed by your authorized Motorola dealer as shortcuts to many of the radio's features.

Check with your authorized Motorola dealer for a complete list of functions your radio supports.

Programmable buttons include:

- The three Side Buttons (A, B, C)
- Top Button (D)

The table on the following page shows the functions available by:

- **short press**—quickly pressing and releasing the programmable buttons, or
- **long press**—pressing and holding the programmable buttons for a period of time (programmable for 1/2 to 16 seconds), or
- **hold down**—pressing and holding down the programmable buttons while checking status or making adjustments.

In the "Button" column, have your authorized Motorola dealer write down the programmable buttons next to the features that have been programmed to them.

Use the abbreviations (e.g., A for Side Button 1, D for Top Button, etc.) shown in the radio illustration at the front of this manual.

Check with your authorized Motorola dealer for a complete list of features your radio supports.

| Feature | Short Press | Long Press | Hold Down | Button |
|---|---|---|---|---|
| Monitor/Permanent Monitor | Temporarily monitors the selected channel for any activity. | Continually monitors the selected channel. | Monitors the selected channel for any activity. | |
| Volume Set | — | — | Sounds a tone for adjusting the radio's volume level. | |
| Nuisance Delete | Temporarily deletes an unwanted active scan member. | — | — | |
| Call Response | Respond to or exit from a Private Call or Call Alert. | — | — | |

## TRUNKED RADIO SYSTEMS

The MTX850 and MTX950 radios can operate on both Privacy Plus™ *trunked* and *conventional* radio systems.

*Conventional* typically refers to radio-to-radio communication, sometimes through a repeater.

A *trunked* radio system allows a large number of users to share a relatively small number of frequencies without interfering with each other.

The air time of all the repeaters in the trunked system is pooled, which maximizes the amount of air time available to any one radio, and minimizes channel congestion.

Some of the benefits of trunked two-way radio systems are:

- No channel monitoring required prior to transmission.
- Improved system access.
- Automatic channel selection.
- Increased privacy among members of the same group.
- Only one attempt is required to access the system. If all channels are busy, the call request enters a queue and the central controller automatically assigns the next available channel. Two (2) medium-pitched tones followed by one (1) high-pitched tone sounds when the call can be made.

## Notes

# GETTING STARTED

## BATTERY INFORMATION

### Charging the Battery

If a battery is new, or its charge level is very low, you will need to charge it before you can use it.

**Note:** Batteries are shipped uncharged from the factory. Always charge a new battery 14 to 16 hours before initial use, regardless of the status indicated by the charger.

***To charge the battery***

Place the battery, with or without the radio, in the charger. The charger LED indicates the charging progress:

| Charger LED Color | Status |
|---|---|
| Flashing Red* | Battery unchargeable or not making proper contact. |
| Steady Red | Battery in rapid-charge mode. |
| Flashing Yellow | Battery in charger, not in rapid-charge mode but waiting to be charged. |
| Flashing Green† | Battery 90% (or more) charged. |
| Steady Green | Battery fully charged. |

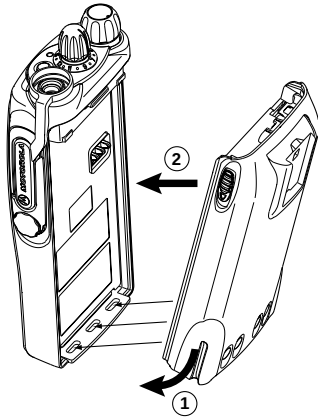
* Remove the battery from the charger. Clean battery contacts with isopropyl alcohol applied to a soft cloth. Place the battery back in the charger. If the LED indicator continues to flash red, replace the battery.

† A standard battery may require one hour to charge to 90%.

Battery chargers will only charge the Motorola-authorized batteries listed below; other batteries may not charge.

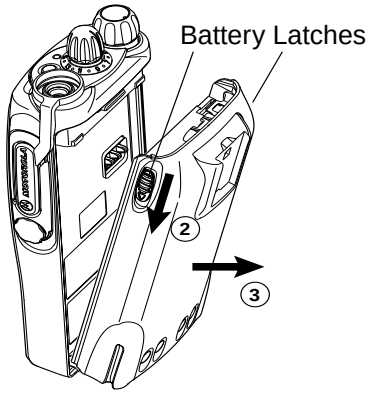
| Part No. | Description |
|---|---|
| HNN9008 | High-Capacity/NiMH |
| HNN9009 | Ultra-High-Capacity/NiMH |
| HNN9010 | Ultra-High-Capacity/Factory Mutual/NiMH |
| HNN9011 | High-Capacity/Factory Mutual/ NiCd |
| HNN9012 | High-Capacity/NiCd |
| HNN9013 | High-Capacity/Lithium-Ion |

## Attaching the Battery




| | |
|---|---|
| **1** | Fit the extensions at the bottom of the battery into the bottom slots on the radio. |
| **2** | Press the top part of the battery toward the radio until you hear a click. |

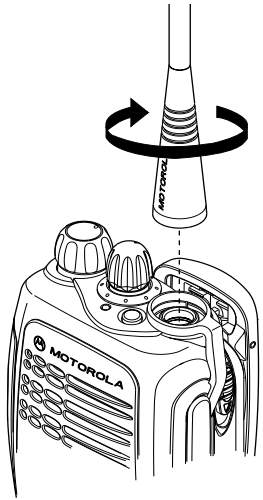
## Removing the Battery




| | |
|---|---|
| **1** | Turn off the radio (see page 28). |
| **2** | Slide both battery latches downward. |
| **3** | Pull the top part of the battery away from the radio. |

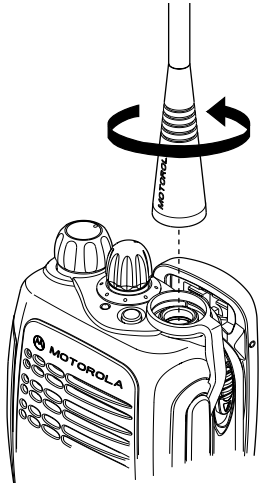
# ACCESSORY INFORMATION

## Attaching the Antenna



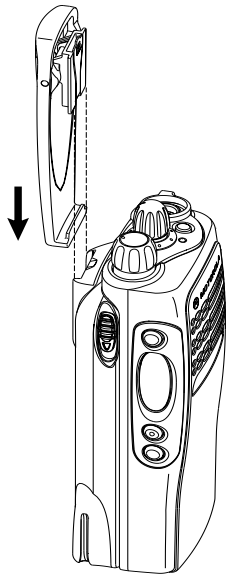

1 Turn the antenna clockwise to attach it.

## Removing the Antenna



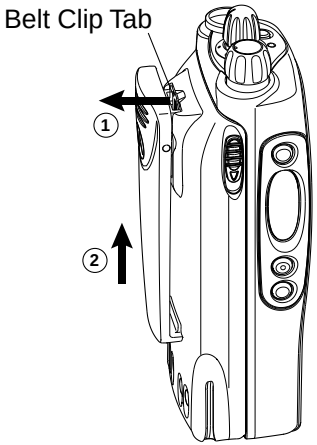

1 Turn the antenna counterclockwise to remove it.

## Attaching the Belt Clip



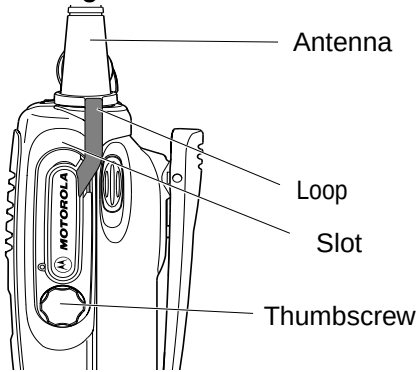
| | |
|---|---|
| **1** | Align the grooves of the belt clip with those of the battery. |
| **2** | Press the belt clip downward until you hear a click. |

## Removing the Belt Clip



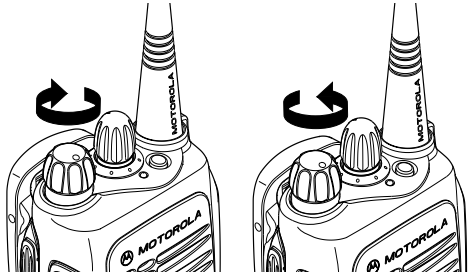

| | |
|---|---|
| **1** | Use a key to press the belt clip tab away from the battery. |
| **2** | Slide the belt clip upward to remove it. |

### Attaching the Side Connector Cover




| | |
|---|---|
| **1** | Place the loop (attached to the side connector cover) over the antenna; then slide it downward until it touches the top of the radio. |
| **2** | Insert the tab on the top of the cover into the slot above the connector. |
| **3** | Position the cover over the connector and align the thumbscrew with the threaded hole in the radio. |
| **4** | Tighten the thumbscrew to hold the cover in place. Do not overtighten the thumbscrew. |

## TURNING RADIO ON OR OFF




Turn the radio on by rotating the volume control clockwise. The radio goes through a power-up self check and, if it passes the check, a good-power-up, high-pitched tone sounds to indicate that the radio has passed the self check.

If the radio fails the self check, a bad-power-up, low-pitched tone will be heard. Turn the radio off, check the battery, and turn the radio back on. If the radio still does not pass the self check, a problem exists in the radio. Contact your authorized Motorola dealer.

## ADJUSTING THE VOLUME

Turn the **On-Off/Volume** knob clockwise to increase the volume or counterclockwise to decrease the volume.

## SELECTING A MODE

Up to 16 modes can be programmed into your radio.

A *mode* is a conventional channel or trunked talkgroup and all the features that are programmed to it.

Use the **Mode Selector** knob to select the appropriate trunked talkgroup or conventional channel.

## SENDING A TRUNKED CALL

| | |
|---|---|
| **1** | Turn the radio on and select the desired trunked talkgroup (See “Selecting a Mode”). |
| **2** | Press and hold the **PTT** button on the side of the radio and speak slowly and clearly into the microphone area. The red LED lights when the radio is transmitting. When you have finished talking, release the **PTT** button to listen. |

- If you hear a busy signal (a low-frequency “bah-bah-bah-bah”), release the **PTT** button and wait for a call-back tone (sounds like “di-di-dit”). When you hear the call-back tone you will have three seconds to press the **PTT** button. This allows you to make another call without getting a busy signal.
- If a continuous talk-prohibit tone is heard when the **PTT** button is pressed, transmission is not possible. The radio may be out of range.

## SENDING A CONVENTIONAL CALL

| | |
|---|---|
| **1** | Turn the radio on and select the desired conventional channel (See “Selecting a Mode”). |
| **2** | Press and hold the **PTT** button on the side of the radio and speak slowly and clearly into the microphone area. The red LED lights continuously when the radio is transmitting. |
| **3** | When you have finished talking, release the **PTT** button to listen. |

**Note:** In the United States, FCC regulations require you to monitor the conventional channels before sending a call. The monitor feature can be accessed through one of your programmable buttons.

- If the mode-busy feature is enabled, a blinking red LED on receive (**PTT** button released) indicates that the mode is currently busy.
- If a mode is programmed for receive only, any attempt to transmit on that mode will cause an invalid-mode tone to sound until the **PTT** button is released.

## RECEIVING A TRUNKED OR CONVENTIONAL CALL

| | |
|---|---|
| **1** | Turn your radio on. |
| **2** | Adjust your radio's volume. |
| **3** | Use the **Mode Selector** knob to select the desired trunked talkgroup or conventional channel.<br>• Make sure the **PTT** button is released. |
| **4** | Listen for voice activity. The LED indicator flashes green when your radio is receiving. |

## FAILSOFT OPERATION (TRUNKED SYSTEMS ONLY)

This feature is programmed by your authorized Motorola dealer.

The "failsoft" system ensures continual radio communications capability during a trunked system failure. Your radio will automatically go into failsoft operation, if the central trunking controller fails for any reason. While in failsoft operation, your radio will transmit and receive on a predetermined frequency on a conventional mode. When the trunked system returns to normal operation, the radio will automatically leave the failsoft operation and return to trunked operation.

During failsoft operation,

| | |
|---|---|
| **1** | You will hear a faint "beeping" sound every ten seconds. |
| **2** | Your radio becomes unsquelched. |

## CODED SQUELCH OPERATION (CONVENTIONAL CHANNELS ONLY)

Tone Private-Line (PL), Digital Private-Line (DPL), and carrier squelch operation are all available in your radio, on a per-mode basis.

When in carrier squelch operation, all traffic on the mode is heard. When in PL or DPL operation, your radio responds to only those messages intended for you. When this feature is mode-slaved, PL, DPL, or carrier squelch is programmed to each mode.

## SMART PTT (CONVENTIONAL OPERATION ONLY)

This feature is programmable by your authorized Motorola dealer.

Smart PTT is a per-mode feature which gives the system manager better control of radio operators. When Smart PTT is enabled in your radio, you cannot transmit on an active mode. Three radio-wide variations of Smart PTT are available.

- **Transmit Inhibit on Busy Mode**—you are prevented from transmitting if any activity is detected on the mode.
- **Transmit Inhibit on Busy Mode with Wrong Squelch Code**—you are prevented from transmitting on an active mode with a squelch code other than your own. If the PL code is the same as yours, you are allowed to transmit.
- **Quick-Key Override**—This feature can work in conjunction with either of the two above variations. This feature allows you to override the transmit-inhibit state by quick-keying (two **PTT** button presses within a programmable period -- the default is one second -- of each other) the radio.

**Note:** If you try to transmit (press the **PTT** button) on a Smart PTT mode that is busy, a continuous alert tone is generated until the **PTT** button is released; the transmission is inhibited.

- The red LED blinks when the radio is receiving indicating that the mode is busy.

## Notes

# RADIO CALLS (TRUNKED OPERATION ONLY)

## RECEIVING A PRIVATE CONVERSATION™ CALL

The Private Conversation feature allows you to carry on a conversation that is heard by two parties.

1. Upon receiving a Private Conversation call, two alert tones will sound (repeating every 5 seconds for 20 seconds).
2. The green LED will blink, indicating that a call is being received. You will have 20 seconds to answer the call.
3. Press the **Call Response** button.

   **Note:** If you press the **PTT** button before you press the **Call Response** button, the response will be transmitted to everyone in the talkgroup (a dispatch mode operation).

   If your radio is configured for Private Call II, upon receiving a Private Conversation call, two alert tones sounds, followed by the received voice.
4. Press the **PTT** button to carry on a Private Conversation with the caller.
5. When finished with conversation, press the **Call Response** button to hang up.

## RECEIVING A CALL ALERT PAGE WITH A GROUP CALL

The Call Alert feature allows your radio to function like a pager (beeper), allowing you to receive and respond to pages from other radios.

1. Upon receiving a Call Alert page, 4 alert tones will sound (repeats every 5 seconds).
2. The green LED lights blinks indicating a call has been received.
3. Press the **PTT** button to answer the page.
4. Begin your conversation; all members of your talkgroup will hear your response. Press the **PTT** button to talk; release the button to listen.

## TRUNKED TELEPHONE OPERATION

The trunked telephone feature allows you to receive telephone calls using your trunked radio.

1. When receiving a telephone call, you will hear a ringing tone.
2. Answer the call by pressing the **Call Response** button.
3. Begin your conversation. Press the **PTT** button to talk; release it to listen.
4. When you have finished your conversation, press the **Call Response** button to hang-up.

# SCAN

## SCAN OPERATION

The scan feature allows you to monitor activity on different conventional or trunked modes by scanning a *scan list* of modes. This list can be programmed by your Motorola authorized dealer.

The table below lists the types of scan operations available.

| | |
|---|---|
| Conventional Scan (autoscan only) | Comprises conventional only modes. |
| Talkgroup Scan (autoscan only) | Comprises conventional modes and trunked modes from more than one trunking system. |

Automatic scanning (autoscan) can be programmed by your authorized Motorola dealer. If autoscan is enabled for a mode, your radio begins scanning using the mode's scan list whenever you select that mode. The radio will continue autoscanning until you select a mode that does not have autoscan enabled.

### Deleting Nuisance Modes

When the radio scans to a mode you do not wish to monitor (nuisance mode), you can temporarily delete that mode from the scan list.

| | |
|---|---|
| **1** | When your radio is locked on the mode to be deleted, press the nuisance-mode delete button (programmable by your authorized Motorola dealer). |
| **2** | A valid-keypress chirp is heard, indicating that the mode has been deleted. |
| **3** | The radio continues scanning the remaining modes in the list. |
| **4** | To resume scanning the deleted mode, you must leave and reenter scan operation. |

## Notes

# WARRANTY

## LIMITED WARRANTY
## MOTOROLA COMMUNICATION PRODUCTS

### I. WHAT THIS WARRANTY COVERS AND FOR HOW LONG:

MOTOROLA INC. (“MOTOROLA”) warrants the MOTOROLA manufactured Communication Products listed below (“Product”) against defects in material and workmanship under normal use and service for a period of time from the date of purchase as scheduled below:

| | |
|---|---|
| MTX850 and MTX950 Portable Units | Two (2) Years |
| Product Accessories | One (1) Year |

Motorola, at its option, will at no charge either repair the Product (with new or reconditioned parts), replace it (with a new or reconditioned Product), or refund the purchase price of the Product during the warranty period provided it is returned in accordance with the terms of this warranty. Replaced parts or boards are warranted for the balance of the original applicable warranty period. All replaced parts of Product shall become the property of MOTOROLA.

This express limited warranty is extended by MOTOROLA to the original end user purchaser only and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by MOTOROLA. MOTOROLA assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of MOTOROLA. Unless made in a separate agreement between MOTOROLA and the original end user purchaser, MOTOROLA does not warrant the installation, maintenance or service of the Product.

MOTOROLA cannot be responsible in any way for any ancillary equipment not furnished by MOTOROLA which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system which may use the Product is unique, MOTOROLA disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

## II. GENERAL PROVISIONS:

This warranty sets forth the full extent of MOTOROLA'S responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at MOTOROLA's option, is the exclusive remedy. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

## III. STATE LAW RIGHTS:

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION OR EXCLUSIONS MAY NOT APPLY.

This warranty gives specific legal rights, and there may be other rights which may vary from state to state.

## IV. HOW TO GET WARRANTY SERVICE:

You must provide proof of purchase (bearing the date of purchase and Product item serial number) in order to receive warranty service and, also, deliver or send the Product item, transportation and insurance prepaid, to an authorized warranty service location. Warranty service will be provided by Motorola through one of its authorized warranty service locations. If you first contact the company which sold you the Product (e.g., dealer or communication service provider), it can facilitate your obtaining warranty service. You can also call Motorola at 1-800-927-2744 US/Canada.

## V. WHAT THIS WARRANTY DOES NOT COVER:

A) Defects or damage resulting from use of the Product in other than its normal and customary manner.

B) Defects or damage from misuse, accident, water, or neglect.

C) Defects or damage from improper testing, operation, maintenance, installation, alteration, modification, or adjustment.

D) Breakage or damage to antennas unless caused directly by defects in material workmanship.

E) A Product subjected to unauthorized Product modifications, disassemblies or repairs (including, without limitation, the addition to the Product of non-Motorola supplied equipment) which adversely affect performance of the Product or interfere with Motorola's normal warranty inspection and testing of the Product to verify any warranty claim.

F) Product which has had the serial number removed or made illegible.

G) Rechargeable batteries if:

1) any of the seals on the battery enclosure of cells are broken or show evidence of tampering.

2) the damage or defect is caused by charging or using the battery in equipment or service other than the Product for which it is specified.

H) Freight costs to the repair depot.

I) A Product which, due to illegal or unauthorized alteration of the software/ firmware in the Product, does not function in accordance with MOTOROLA's published specifications or the FCC type acceptance labeling in effect for the Product at the time the Product was initially distributed from MOTOROLA.

J) Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.

K) Normal and customary wear and tear.

## VI. PATENT AND SOFTWARE PROVISIONS:

MOTOROLA will defend, at its own expense, any suit brought against the end user purchaser to the extent that it is based on a claim that the Product or parts infringe a United States patent, and MOTOROLA will pay those costs and damages finally awarded against the end user purchaser in any such suit which are attributable to any such claim, but such defense and payments are conditioned on the following:

A) that MOTOROLA will be notified promptly in writing by such purchaser of any notice of such claim;
B) that MOTOROLA will have sole control of the defense of such suit and all negotiations for its settlement or compromise; and
C) should the Product or parts become, or in MOTOROLA's opinion be likely to become, the subject of a claim of infringement of a United States patent, that such purchaser will permit MOTOROLA, at its option and expense, either to procure for such purchaser the right to continue using the Product or parts or to replace or modify the same so that it becomes non-infringing or to grant such purchaser a credit for the Product or parts as depreciated and accept its return. The depreciation will be an equal amount per year over the lifetime of the Product or parts as established by MOTOROLA.

MOTOROLA will have no liability with respect to any claim of patent infringement which is based upon the combination of the Product or parts furnished hereunder with software, apparatus or devices not furnished by MOTOROLA, nor will MOTOROLA have any liability for the use of ancillary equipment or software not furnished by MOTOROLA which is attached to or used in connection with the Product. The foregoing states the entire liability of MOTOROLA with respect to infringement of patents by the Product or any parts thereof.

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## VII. GOVERNING LAW:

This Warranty is governed by the laws of the State of Illinois, USA.

# ACCESSORIES

Motorola offers a number of accessories to enhance the productivity of your two-way radio. Many of the available accessories are listed below. The Motorola dealer will also have a complete list of accessories.

## CARRY CASES

| | |
|---|---|
| HLN9714_ | Spring 2 1/2” Belt Clip |
| HLN9952_ | Belt Clip Carry Holder |
| HLN9652_ | Leather Case, Thin Battery with Belt Loop |
| HLN9665_ | Leather Case, Standard Battery with Belt loop |
| HLN9670_ | Leather Case, Thin Battery with Swivel |
| HLN9676_ | Leather Case, Standard Battery with Swivel |
| HLN9701_ | Nylon Case, Thin Battery with Belt Loop (compatible with all batteries) |

## HEADSETS

| | |
|---|---|
| AARMN4018_ | Lightweight Headset with Boom Microphone & In-Line PTT. |
| AARMN4031_ | Lightweight Headset with Swivel Boom Microphone |
| AARMN4017_ | Ultra-Light Headset |
| AARMN4019_ | Over-the-Head, Medium-Weight, Dual Muff Headset With Noise Cancelling Microphone & In-Line PTT |
| AARMN4032_ | Over-the-Head, Medium-Weight, Dual Muff Headset With Noise Cancelling Microphone |

## REMOTE SPEAKER MICROPHONES

| | |
|---|---|
| AAHMN9052_ | Standard Remote Speaker Microphone |
| AAHMN9053_ | Noise-Cancelling Remote Speaker Microphone |

## ADAPTERS

| | |
|---|---|
| AAHLN9716_ | Adapter for Audio Accessories |

## EARPIECES

| | |
|---|---|
| AARMN4022_ | Two Wire Earpiece with Microphone & PTT (Beige) |
| AARMN4029_ | Two Wire Earpiece with Microphone & PTT (Black) |
| AARMN4021_ | One Wire Earpiece (Beige) |
| AARMN4028_ | One Wire Earpiece (Black) |
| RLN4941_ | Receive-Only Earpiece with Translucent Tube, Rubber Eartip and 3.5 mm Plug (For use with AAHMN9053) |
| RLN4922_ | Completely Discrete Earpiece Kit-use with any standard two wire earpiece kit |

## COMMPORT: INTEGRATED MICROPHONE/RECEIVER

CommPort Integrated Microphone/Receiver System is a communication device that is intelligible in high noise levels up to 10dB. This device's acoustic technology does not rely on bone conduction for communication.

| | |
|---|---|
| NTN1722_ | Integrated Ear Microphone/Receiver System with PTT |
| NTN1723_ | Integrated Ear Microphone/Receiver System with Palm PTT |
| NTN1724_ | Integrated Ear Microphone/Receiver System with Ring PTT |

## BATTERIES

| | |
|---|---|
| HNN9008_R | Small NiMH, High-Capacity |
| HNN9009_R | Large NiMH, Ultra-High-Capacity |
| HNN9010_R | Large NiMH, Ultra-High-Capacity FM |
| HNN9011_R | Large NiCd, High-Capacity FM |
| HNN9012_R | Large NiCd, High-Capacity |
| HNN9013_R | Slim Li-Ion, High-Capacity |

## CHARGERS

| | |
|---|---|
| AAHTN3000_ | 110V Single-Unit Rapid Charger, US Plug |
| AAHTN3003_ | 110V Multi-Unit Rapid Charger, US Plug |

## ANTENNAS

| | |
|---|---|
| NAF5037_ | 800 MHz 1/2, Wave Whip Antenna, 806-870 MHz |
| NAF5042_ | 800 MHz 1/4, Wave Whip Antenna, 806-941 MHz |
| NAF5038_ | 900 MHz 1/2, Wave Whip Antenna, 896-941 MHz |

### Sending a Trunked Call

1. Turn the radio on and select the desired trunked talkgroup using the **Mode Selector** knob.
2. Press the **PTT** button to talk. The red LED lights while transmitting.
3. Release the **PTT** button when you have finished talking.

### Sending a Conventional Call

1. Turn the radio on and select the desired conventional channel using the **Mode Selector** knob**.**
2. Press the **PTT** button to talk. The red LED lights while transmitting.
3. Release the **PTT** button when you have finished talking.

### Receiving a Trunked or Conventional Call

1. Turn the radio on and select the desired trunked talkgroup or conventional channel using the **Mode Selector** knob. Make sure the **PTT** button is released.
2. Listen for voice activity. The green LED flashes while receiving.

### Receiving a Private Conversation™ Call

1. Two repeating alert tones sound when receiving a Private Conversation call.
2. The green LED flashes while receiving. You have 20 seconds to answer.
3. Press the **Call Response** button. Press the **PTT** button to talk.
4. Press the **Call Response** button to hang-up.

### Receiving a Call Alert

1. Four repeating alert tones sound when receiving a Call Alert page.
2. The green LED blinks while receiving.
3. Press the **PTT** button to talk; release the **PTT** button to listen.

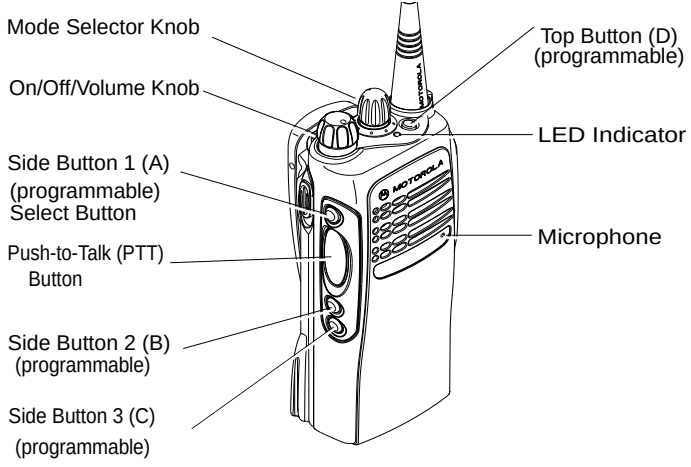
### Trunked Telephone Operation

1. When receiving a telephone call, you will hear a ringing tone.
2. Press the **Call Response** button to answer. Press the **PTT** button to talk; release the **PTT** button to listen.
3. Press the **Call Response** button to hang-up.

MOTOROLA

# MTX850 and MTX950 Quick Reference Card

**Record the functions for your radio's programmable buttons in the table provided below. For further information, see page 19 in this User Guide.**




| Button | Function | Short Press | Long Press | Hold Down | Page |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

## Notes

MOTOROLA
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MOTOSTAR

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